

Simplify:

$$\frac{3y(y+7)}{(y+7)(y^2-9)} = \frac{3y}{(y-3)(y+3)}$$

$y \neq -7$   
 $y \neq \pm 3$

$$\frac{a^4b - 2a^4}{2a^3 - a^3b}$$

$$\frac{a^4(b-2)}{a^3(2-b)} = \frac{a^4(b-2)}{a^3(2-b) \cdot (-1)(b-2)} = \frac{a^4(b-2)}{-a^3(b-2)}$$

$$\frac{x^2 + 2x - 3}{x^2 - 2x - 15}$$

$$\frac{(x-1)(x+3)}{(x+3)(x-5)}$$

$x \neq -3$

$$\frac{(x-1)}{(x-5)}$$

## Multiplication and Division

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd} \quad \begin{matrix} b \neq 0 \\ d \neq 0 \end{matrix}$$

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc} \quad \begin{matrix} b \neq 0 \\ c \neq 0 \\ d \neq 0 \end{matrix}$$

$$\frac{\cancel{8}x}{\cancel{21}y^3} \cdot \frac{\cancel{7}y^2}{\cancel{16}x^2} = \frac{1}{6x^2y}$$

$\begin{matrix} 3 \\ 2 \end{matrix}$

$$\frac{5a^4c}{12b} \cdot \frac{24bc^2}{15a^3b^2} = \frac{2ac^3}{3b^2}$$

$$\frac{10ps^2}{3c^2d} \div \frac{5ps}{6c^2d^2}$$

$$\frac{\cancel{10}^2ps^2}{\cancel{3}c^2d} \cdot \frac{\cancel{24}^2c^2d^2}{\cancel{5}ps} = 4cd$$

$$\frac{a^3 - b^3}{a^2 - b^2} \cdot \frac{(a+b)^2}{a^3 + b^3}$$

$$\frac{\cancel{(a-b)}(a^2+ab+b^2) \cdot \cancel{(a+b)}^2}{\cancel{(a-b)}\cancel{(a+b)} \cdot \cancel{(a+b)}(a^2-ab+b^2)}$$

$$\frac{a^2+ab+b^2}{a^2-ab+b^2}$$

$$\frac{k-3}{k+1} \div \frac{k^2-4k+3}{1-k^2}$$

$$\frac{\cancel{k-3}}{\cancel{k+1}} \cdot \frac{\cancel{(1+k)}\cancel{(1+k)}}{\cancel{(k-1)}\cancel{(k-3)}} = -1$$

Complex Fraction--rational expression with rational expression in numerator or denominator

$$\frac{\frac{x^2}{(9x^2-4y^2)}}{\frac{x^3}{2y-3x}}$$

$$\frac{\cancel{x^2}}{\cancel{(3x+2y)}\cancel{(3-2y)}} \cdot \frac{\cancel{(2y-3x)}^{-1}}{\cancel{x^3}}$$

$$\frac{-1}{x(3x+2y)}$$

HW  
p476  
23-39odd